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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/915,946	07/26/2001	Kohei Suzuki	10059-391US (P25827-01)	1491
570	7590	07/09/2004	EXAMINER	
AKIN GUMP STRAUSS HAUER & FELD L.L.P. ONE COMMERCE SQUARE 2005 MARKET STREET, SUITE 2200 PHILADELPHIA, PA 19103-7013			KALAFUT, STEPHEN J	
			ART UNIT	PAPER NUMBER
			1745	

DATE MAILED: 07/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/915,946

Applicant(s)

SUZUKI ET AL.

Examiner

Stephen J. Kalafut

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 May 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>5/4/04</u> . | 6) <input type="checkbox"/> Other: _____ |

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The request filed on 5/4/2004 for Continued Examination (RCE) under 37 CFR 1.114 based on parent Application No. 09/915,946 is acceptable and a RCE has been established. An action on the RCE follows.

The indicated allowability of claims 1-9 is withdrawn in view of the newly discovered reference(s) to Umeda *et al.* and Matsuo *et al.*, both cited by applicants. Rejections based on the newly cited reference(s) follow.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goto (US 6,444,351), in view of either Umeda *et al.* or Matsuo *et al.*

Goto discloses a spirally wound cell (5) including a negative electrode sheet comprising graphite, which is a carbon material, and a binder, thus forming a mixture (column 9, lines 16-29), which intercalates lithium (column 5, lines 34-42); a positive electrode sheet having an active material density of 3.6 g/ml, and comprising the lithium transition metal oxide LiCoO_2 and polyvinylidene fluoride as a binder (column 8, lines 34-51); and separator between the electrodes (column 4, lines 20-23), which contains a lithium salt (column 6, lines 16-20) and a nonaqueous solvent (column 6, lines 32-38). As seen in figure 4, the cell may have an elliptical

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cross section. These claims differ from Goto by reciting that the binder is particulate. Umeda *et al.* disclose a cell with lithium transition metal oxide cathodes, which include a particulate binder (sections 0007 and 0008). This would increase the cell's ability to maintain capacity (section 0008) and produce adhesive strength (section 0011). For these reasons, it would be obvious to use the particulate binder of Umeda *et al.* in the cathode of the cell of Goto. Matsuo *et al.* disclose a cell with lithium transition metal oxide cathodes, which include a particulate binder (sections 0009, 0011 and 0012). This would increase the cell's ability to maintain capacity in long-term repeat use (section 0007). For this reason, it would be obvious to use the particulate binder of Matsuo *et al.* in the cathode of the cell of Goto. Regarding claims 3 and 6, while Goto does not specifically disclose the present length ratio the two elliptical axes or the present range of the amount of binder relative to the amount of active material, the shape of the cell would affect its compatibility with the devices using current therefrom, and the amounts of electrode components would have an effect on the capacity and mechanical stability of the electrode. The latter would be important due to the stresses involved with rolling a set of flat components into a spiral. Thus, determining optimal values for the ratio of axial lengths and relative amounts of electrode components would be within the skill of the artisan.

Claims 4, 5, 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goto in view of either Umeda *et al.* or Matsuo *et al.* as applied to claims 1 and 4 above, and further in view of Suzuki (US 5,595,841).

These claims differ from the above combination by reciting that the positive electrode binder is an elastic copolymer having units of 2-ethylhexylacrylate, acrylic acid and acrylonitrile;

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or that the positive electrode also includes a conductive mixture of graphite and carbon black, in amounts relative each other and to the active material. Claim 9 also recites the present range of the amount of binder relative to the electrode material, which is considered obvious for reasons stated above. Suzuki discloses the present copolymer (column 3, lines 28-30), in the form of a latex (column 3, lines 1-9), which would be elastomeric, in either or both electrodes (column 1, lines 45-48). Since this is the same polymer as presently claimed, the present spectroscopic characteristics would inherently accrue. In addition, a second polymer may be used, some of which have ethylene units, and thus a polyethylene structure (column 3, line 64 through column 4, line 13). The polymers disclosed by Suzuki provide “good cycle characteristics, high capacity, and improved first cycle efficiency and production fitness” (column 1, lines 35-48). For this reason, it would be obvious to use the polymers of Suzuki in either of the electrodes of Goto, in particulate form as taught by either Umeda *et al.* or Matsuo *et al.* Also, since Suzuki teaches his polymers to be in latex form and thus elastomeric, his polymers would be beneficial under the mechanical stresses of the spiral arrangement disclosed by Goto. Suzuki also discloses a conductive agent for the positive electrode comprising a combination of graphite and acetylene black, and gives guidelines for the amounts in which these additives are contained in the electrode (column 9, line 62 through column 10, line 18). In view of this teaching, it would be obvious to use as a conductive agent for the positive electrode of Goto, the combination of graphite and acetylene black disclosed by Suzuki, and to optimize the relative amounts of the components of the resulting electrode.

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The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Computer-generated English translations of Umeda *et al.* and Matsuo *et al.* are enclosed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen J. Kalafut whose telephone number is 571-272-1286. The examiner can normally be reached on Mon-Fri 8:00 am-4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

sjk


STEPHEN KALAFUT
PRIMARY EXAMINER
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